

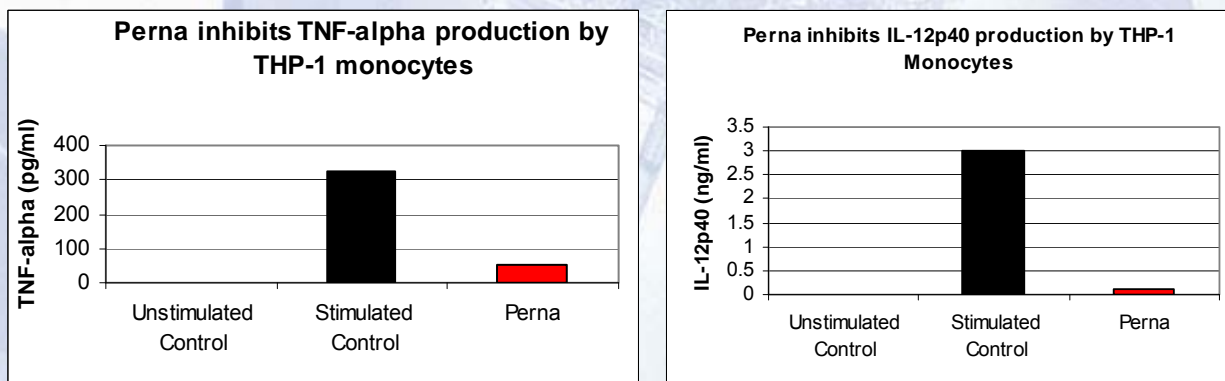
Evaluation of *Perna canaliculus* on the inflammatory markers TNF-alpha and IL-12 p40.

Objective: This cell culture study was designed to evaluate the effect of *Perna canaliculus* on the production of pro-inflammatory cytokines TNF- α and IL-12 p40.

Background: Pro-inflammatory cytokines TNF- α and IL-12 p40 have been implicated in the pathogenesis of arthritis. *Perna canaliculus* has been found to have anti-inflammatory effects in CIA models and in other systems. The mechanism by which *Perna* exerts its anti-inflammatory effects may reside in its ability to suppress the immune response and specifically to down-regulate TNF- α and IL-12 p40 cytokines.

Methods: A monocytic cell line that produces IL-12 p40 and TNF- α upon LPS stimulation was selected to evaluate the effect of *Perna canaliculus* on the inflammatory process. Following established cell culture techniques, the monocytes were cultured with *Perna* extract using Tween -20 in a concentration range of 0.0001-1 μ M for 48 hours. This was followed by LPS stimulation over night and the levels of TNF- α and IL-12 p40 were determined 48 hours later by ELISA and were compared to stimulated controls.

Results: *Perna* treated cells showed a statistically significant reduction in pro-inflammatory cytokines. Treatment of monocytes in cell culture with a *Perna* extract resulted in a dose-dependant reduction in the production of TNF- α and IL-12p40 cytokines, particularly at concentrations greater than 0.1 mg/ml.



Conclusion: This study shows that *Perna* appears to reduce key markers of inflammation. The study showed that *Perna* was effective in reducing production of both TNF- α and IL-12 p40 cytokines in stimulated monocytes. *Perna*'s ability to reduce these pro-inflammation cytokines may help explain the mechanisms by which *Perna* can both prevent and reverse inflammation in both animal and human studies.

Clinical Relevance: The disease promoting role of elevated TNF- α in arthritis is well-established and this study demonstrates that *Perna* can reduce TNF- α and other pro-inflammatory cytokines. These results when combined with other animal and all culture work will help to explain how *Perna* can benefit dogs and humans that have OA and other inflammatory conditions.

Lawson J, et al. Evaluation of *Perna canaliculus* on the inflammatory markers TNF-alpha and IL-12 p40. Clemson University, 2006. Published in *BMC Complimentary and Alternative Medicine*, 2007, 7:20.